

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

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| 1. Name of Department | : | Department of Civil Engineering |
| 2. Degree | : | MTech (Sponsored Category) |
| 3. Programme/ Specialization | : | Transportation Engineering & Planning |

SYALLABUS FOR ADMISSION TEST

S. No	Contents	Weightage (%)
1.	<p>Traffic Engineering & Studies: traffic elements, characteristics-vehicle, road user and road; traffic studies-speed & delay, traffic volume, O & D, parking and accidents, sample size, study methodology, data collection & presentation.</p> <p>Traffic Analysis: Speed, volume, parking & accident data analysis, statistical approach, traffic maneuvers, different intersections, conflict points, traffic stream characteristics-relationship between speed, flow and density, fundamental equation of traffic flow, level of service & capacity analysis, traffic forecasting.</p> <p>Traffic Design: Channelisation of islands for different traffic situations, design of rotaries & at-grade intersections, grade separated intersections, their warrants; facilities for pedestrian & bicycle ways.</p> <p>Traffic Control Devices: Traffic signs, markings and signals; principles of signal design, Webster's method, signal coordination.</p> <p>Traffic Regulation & Management: Speed, vehicle, parking, enforcement regulations, mixed traffic regulation, management techniques-one-way, tidal flow, turning restrictions etc., road safety measures.</p>	50
2	<p>Highway Geometric Design: Alignment Issues, Cross section elements, sight distance characteristics, horizontal and vertical alignment, hill roads</p> <p>Highway Materials like Soil, Aggregate, Asphalt etc, their properties and testing. Pavement Mix Analysis: Bituminous mix design – Marshall stability approach, concrete mix design for roads.</p> <p>Pavement Basics: Types & comparison, vehicular loading pattern, loading pattern on airport pavement, factors affecting design and performance of pavements, airport pavement, environmental impact on pavements, sub grade requirements</p> <p>Design of Flexible Pavements: Analytical approach, flexible pavement layers, ESWL, repetitions of load, techniques of design methods, wheel load analysis, traffic analysis, stress distribution in subgrade soil, Burmister's theories, group index method, CBR approach, IRC guidelines, CRV method, triaxial & McLeod method, present practices.</p> <p>Design of Concrete Pavements: Westergaard's approach, temperature & frictional stresses, design of expansion & longitudinal joints, design of dowel & tie bars, IRC guidelines, present design practices.</p> <p>Highway Drainage: Importance, principles of surface drainage, roadside drains-cross-section; design, drains for hill roads, subsurface drains, capillary cut-off treatment.</p> <p>Cross Drainage Works: Importance of cross drainage, causeways, culverts & bridges- types; estimation of design discharge, fixation of waterway, foundation depth and spans.</p>	50
3	Basics of other Disciplines of Civil Engineering outside Transportation Engineering discipline such as Geotechnical Engineering, Water Resources Engineering, Structural Engineering, Engineering Survey etc	30
4	<p>Statistics & Probability Base: Various probability distributions & their applications, parameter estimation, hypothesis testing, random variables, method of maximum likelihood.</p> <p>Linear & Multi-linear Regression and Correlation Analysis: Estimation and analysis of simple regression models, correlation coefficients, analysis of correlation coefficients.</p> <p>Basics of numerical methods and optimization.</p> <p>General aptitude and reasoning</p>	20